250W AC/DC Switching Power Supply
Model: TN17-0250-XX



FEATURES

- Universal 90 - 264VAC input voltage.
- Built-in active PFC function.
- 200W with convection cooling, 250W with forced air cooling.
- High efficiency up to 94.2%.
- High power density, compact size: 5.0”x3.0”x1.3” (above PCB).
- Operating ambient temperature range: -20°C to +70°C.
- Output short circuit, over-current, over-voltage protection, over-temperature protection.
- Operating altitude up to 5000m.
- Safety according to IEC62368-1.

Models & Ratings

Model No. (1)	Cooling Method	Output Power (W) (2)	Output Voltage (V)	Output Current (A)	Efficiency (%) Typ. (3)
TN17-0250-12	Convention Cooling	200	12	16.66	91.3
	Forced Air Cooling (4)	250	12	20.83	
TN17-0250-24	Convention Cooling	200	24	8.33	94.2
	Forced Air Cooling (4)	250	24	10.41	
TN17-0250-48	Convention Cooling	200	48	4.16	93.9
	Forced Air Cooling (4)	250	48	5.20	
TN17-0250-55	Convention Cooling	200	55	3.63	93.9
	Forced Air Cooling (4)	250	55	4.54	

Notes:

1. Model Name Description.

T N 17 - 0 2 5 0 - XX
- VV
①

① VV : Output Voltage or Series Model
12 : 12V Output.
24 : 12V Output.
48 : 48V Output.
55 : 55V Output.

2. Under any conditions, the total power of the product should not exceed the rated power.

3. When measuring full-load efficiency (typical values are measured at 230VAC input and 250W load), the fan should be connected to an external power supply.

4. The equipment tested with forced air cooling fan min 11.3 CFM outwardly and installed in final system, see below

figure A for details.

Disclaimer:

The force air flow and structural diagrams are for reference only of the PSU standalone safety declaration, actual requirements should be based on system configuration and measurement of component temperature rise.

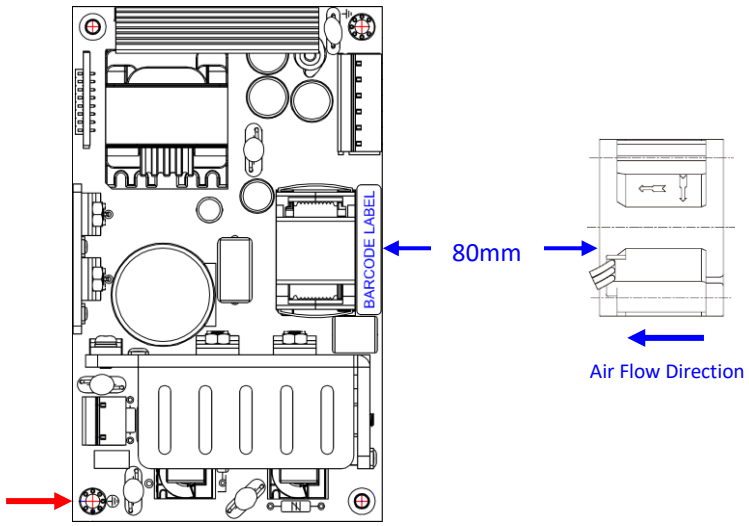


Figure A.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Input voltage (Refer to power derating curve)		90	100-240	264	VAC
Input Frequency	-		47	50-60	63	Hz
Input Current	115VAC & maximum load		-	-	2.6	Arms
	230VAC & maximum load		-	-	1.3	
Inrush Current	115VAC	At 25°C, Cold start	-	-	50	A peak
	230VAC		-	-	100	
Power Factor	115VAC & maximum load		0.98	-	-	-
	230VAC & maximum load		0.95	-	-	-
No Load Power Consumption	230VAC, no load		-	-	0.5	W
Earth Leakage Current	264VAC/63Hz(max)		-	-	3.5	mA

Main Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage	See Models and Ratings table		12	-	55	VDC
Output Accuracy	Not adjustable		-	±5	-	%
Minimum Load	-		0	-	-	A
Line Regulation	90 - 264VAC, constant load		-	±1	-	%
Load Regulation	Output from 0 - 100% load		-	±2	-	%
Ripple & Noise (5)	Oscilloscope Bandwidth : 20MHz	0°C < Ta < 70°C	-	-	1	%
Transient Response	50-75% and 75-50% load step, 1A/μsec slew rate		-	±5	-	%
Turn on Delay Time	115/230VAC maximum load from input AC turn on		-	-	1	S
Rise Time	Maximum load, 10% to 90% of output voltage		-	-	50	mS
Hold-up Time	At 25°C, 115VAC & maximum load, 90% of		10	-	-	mS

	output voltage				
Over-voltage Protection	Output shut down and auto recovery	110	-	130	%
Over-current Protection	Output shut down and auto recovery	110	-	130	%
Short Circuit Protection	Output shut down and auto recovery	-	-	-	-

Notes:

5. Please refer to Figure B to measure Vo, line regulation, load regulation, and ripple voltage. The output voltage is measured at the power supply output terminal.
   Ripple and noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a C1: 0.1μF ceramic or film capacitor and C2: 47μF low ESR electrolytic capacitor parallel, After 20 min warm up.

Ripple & Noise measurement circuit

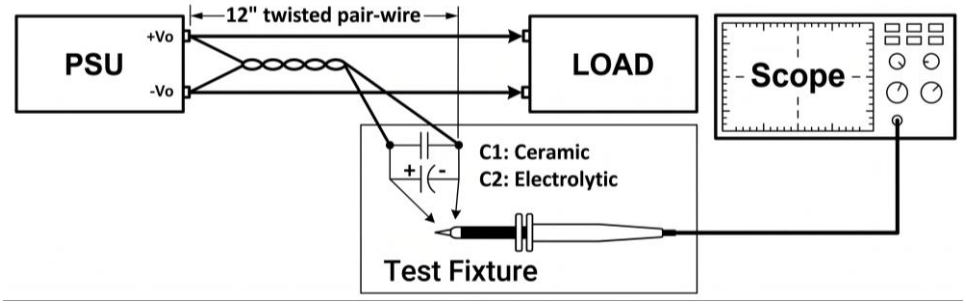


Figure B.

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Electrical Strength Test (6)	Input - Output	Electrical strength test for 1 minute, leakage current is less than 10mA.	3,000	-	-	VAC
	Input - FG		1,800	-	-	
	Output - FG		2,250	-	-	VDC
Insulation Resistance	Input - Output	25±5°C, 70% RH, non-condensing testing voltage 500VDC.	100	-	-	MΩ
	Input - FG		100	-	-	
	Output - FG		100	-	-	
Mean Time Between Failure	At 230VAC/60Hz 100% load 25°C, Telcordia SR332, issue4.		500,000	-	-	Hrs.

Notes:

6. The electric strength test of LY production line was conducted for 3 seconds, and the leakage current was less than 10mA.

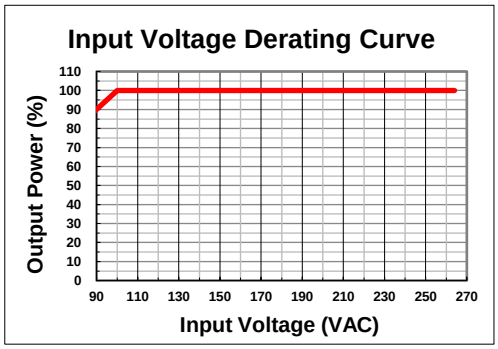
Environmental Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Operating Temperature	Refer to power de-rating curve		-20	-	+70	°C
Storage Temperature	Non-operation		-40	-	+85	
Operating Humidity	Non-condensing		10	-	90	%
Storage Humidity	Non-operation		5	-	95	
Power De-rating (7)	Operating Temperature	+50°C to +70°C	2.5	-	-	%/°C

	Input voltage	90VAC - 100VAC	1	-	-	%/VAC
Cold temperature start up	can start up normally when the ambient temperature is below 0 ~ -20°C, but some specifications may not meet the requirements.					
Altitude	Operating altitude		-	-	5,000	meter
Vibration	Operating：0.5G, 5 - 500Hz, 10 min/cycle, 30 min each axis (X, Y, Z)					
Shock	Non-operating (package)：20G, 11 ms, 1 shock per direction per axis (X, Y, Z)					

Notes:

7. Input voltage and temperature derating curve: Please refer to the derating specifications and curves below.
   a. Input Voltage Derating Curves: Please refer to Figure C.
   Derate linearly from 100% load at 100VAC to 90% load at 90VAC.

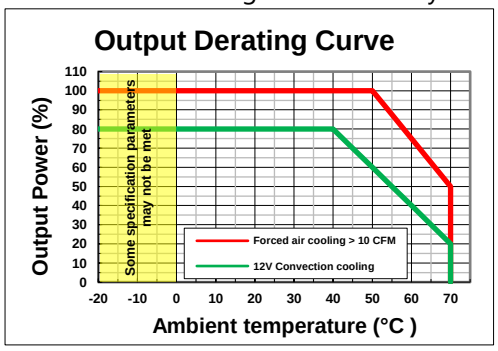


Input voltage (VAC)	Rated output load (%)
100 - 264	100
90	90

Figure C.

   b. 12V Temperature Derating Curves: Please refer to Figure D.

   1. Forced air cooling: Derate linearly from 100% load at +50 °C to 50% load at +70 °C.
   2. Convention cooling: Derate linearly from 80% load at +40 °C to 20% load at +70 °C.



Ambient temperature (°C)	Forced air cooling Rated output load (%)	Convention cooling Rated output load (%)
-20 - +40	100	80
+40 - +50	100	60
+60	75	40
+70	50	20

Figure D.

C. 24-55V Temperature Derating Curves: Please refer to Figure E.

   1. Forced air cooling: Derate linearly from 100% load at +50 °C to 50% load at +70 °C.
   2. Convention cooling: Derate linearly from 80% load at +50 °C to 40% load at +70 °C.

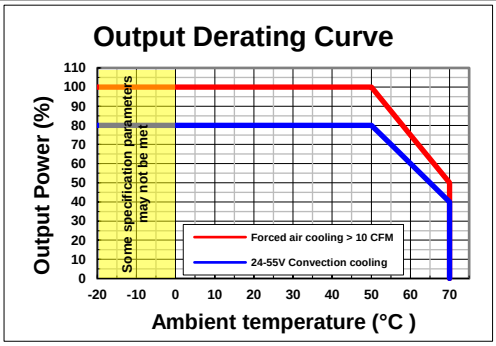


Figure E.

Ambient temperature (°C)	Forced air cooling Rated output load (%)	Convention cooling Rated output load (%)
-20 - +50	100	80
+60	75	60
+70	50	40

Safety Approvals

Certification	Standard	Notes & conditions
UL	UL/cUL UL62368-1, 2nd Edition	-
TUV	TUV EN62368-1, 2nd Edition	-
CB report	CB IEC62368-1, 2nd Edition	-
CCC	GB 4943.1-2022	-
Safety Class	Class I only	-

Electromagnetic Compatibility (EMC)

Emissions	CE	EN55032 (CISPR32) Class B,	
	RE	EN55032 (CISPR32) Class B,	
	Harmonic Current	IEC/EN61000-3-2 Class A	
	Flicker	IEC/EN61000-3-3	
Immunity	ESD	IEC/EN61000-4-2, level 4, Contact +/- 8KV; Air discharge +/- 15KV	Criteria A
	RS	IEC/EN61000-4-3, level 3, 10V/m	Criteria A
	EFT	IEC/EN61000-4-4, level 3, +/- 2KV	Criteria A
	Surge	IEC/EN61000-4-5, level 4, Line to Line +/-2KV; Line to Earth +/-4KV	Criteria A
	CS	IEC/EN61000-4-6, level 2	Criteria A
	PFMF	IEC/EN61000-4-8, level 1	Criteria A
	DIP	IEC/EN61000-4-11	Criteria B

Note:

8. The power supply should be considered a part of the system component. All EMC tests conducted with the unit installed in a metal enclosure dummy system. The power supply needs to be confirmed for electromagnetic compatibility in conjunction with the terminal equipment.

9. The surge protectors of models TN17-0250-12 and TN17-0250-55 comply with IEC61000-4-5 level 4 standard, while the surge protectors of models TN17-0250-24 and TN17-0250-48 comply with IEC61000-4-5 level 3 standard.

Dimensions and Recommended Layout

Item	Value	Unit
Weight (Typ.)	311.2	g
Size (L x W x H)	127.0 x 76.2 x 33.4 (above PCB, Refer to outline drawing)	mm

Outline Drawing: (Unit: mm, Tolerance: ±1.0 mm)

